Climate vulnerability of ecotourism attractions

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The climate vulnerability of South Africa's ecotourism attractions

- Tourism is a large source of employment, particularly in areas that are well-known for their natural attractions
- Climate events threaten to continue to impact the sector, particularly floods and droughts, and could undermine natural attractions.

- In 2019, biodiversity-based tourism, defined as travel involving the use or enjoyment of South Africa's diverse ecosystems and species, contributed
  - R28 billion to GDP and supported
  - over 91,000 jobs, representing 12% of all direct tourism employment (Statistics South Africa, 2024)

Cost of infrastructure damage to Kruger estimated at over R500 million from January 2026 floods.

Research approach

The paper explores climate threats to South Africa's top ecotourism attractions, which are typically the major sites of biodiversity and charismatic species.

A *particular emphasis is placed on trends in adaptive capacity, understood as the technical, institutional, and financial resources available to respond to climate risks*. The analysis is based on:

- **Ecotourism attraction site selection** combining visitor statistics, UNESCO World Heritage status, and considerations of geographic diversity, and management authority/ stewardship body type
- **Document review** of policy frameworks, vulnerability assessments, annual reports, and academic literature
- **Key informant interviews** with managers in the management authorities leading ecotourism sites

Top ecotourism attractions/ sites

Top Ecotourism site	Province	Ownership/ Management authority	Category of attraction
Camps Bay beach	Western Cape	Municipal	Beach
Table Mountain National Park (inclusive of Boulders Beach, Cape Point, and the Cablecar)	Western Cape	SANParks	National/ provincial park (UNESCO WHS)
The Cape Winelands	Western Cape	Private landowners	Farmlands
Kruger National Park	Mpumalanga and Limpopo	SANParks	National/ provincial park
Mapungubwe National Park	Limpopo	SANParks	National/ provincial park (UNESCO WHS)
Addo Elephant Park	Eastern Cape	SANParks	National/ provincial park
Pilanesberg National Park and Game Reserve	North-West	North-West Parks and Tourism Board	National/ provincial park
Beaches (North beaches, Ethekwini)	KwaZulu-Natal	Municipal	Beach
Ukhahlamba - Drakensberg mountains	KwaZulu-Natal	Ezemvelo-KZN Wildlife	National/ provincial park (UNESCO WHS)
ISimangaliso Wetland Park	KwaZulu-Natal	Isimangaliso Wetland Park Authority	National/ provincial park (UNESCO WHS)
Golden Gate National Park	Free State	SANParks	National/ provincial park
Kgalagadi Transfrontier Park	Northern Cape	SANParks	National/ provincial park
Namaqualand flowers	Northern Cape	SANParks (Namaqua National Park)	National/ provincial park

Document review: general

- Tourism businesses and ecotourism attractions must plan for climate impacts by improving their **adaptive capacity**. This builds resilience.

- The Africa chapter of the International Panel for Climate Change's Assessment Report 6 indicates that, in general, **adaptation on the continent is fragmented, small-scale and uneven** (IPCC, AR6, 2022). Furthermore, certain responses are also **not rated as highly feasible because of the technological, institutional, and financial barriers** they face (Trisos et al., 2022).

- South Africa's second Nationally Determined Contributions, submitted in 2025, reports that **significantly scaled-up international financial and non-financial support is essential for national adaptation strategies and sectoral and sub-national planning** (Government of South Africa, 2025).

➢ ***Institutional and technological capacity supported by finance for adequate responses.***

Literature review: tourism planning, policy in SA

- 2012: Golder and Associates: baseline assessment climate vulnerability of major tourist attractions
- 2019: Promethium Carbon 27 ecotourism site assessments and synthesis report
- 2021: Climate change communication strategy
- 2021: Tourism Environmental Implementation plan

All call for ***improved communication and coordination on CC among stakeholders***.

- Recent Tourism White paper 2024; 2025 – 2030 strategic plan of the Department; G-20 ministerial announcements***, focus on resilience planning for disasters***, (where climate disasters are identified alongside other disasters).

- ***Significant academic work*** on tourism and CC in SA, more than 39 (Prinsloo, A., Fitchett, J.M., Hoogendoorn, G. and Saarinen, J., 2026)
- ***Industry has no clear position overall***, but some firms are quite worried.

In 2024/5 online survey, 81% of the 123 respondents (who were mostly inbound long haul tour operators working with holiday tourists) were either very (33%) or somewhat (48%) worried about the impact of climate change on their business (K.Rivett-Carnac, 2025).

Interviews with managers and specialists at the top ecotourism attractions

- SANParks
- Drakensberg
- Ethekwini beaches
- Cape Town beaches
- Cape Winelands
- Pilanesberg
- Isimangaliso (doc shared)

Focus

- Climate risks
- Responses
- Challenges and opportunities re. adaptive capacity: technological, institutional and financial

Findings: variations across categories of attractions

Beaches

- The category **least at risk for now appears to be the beaches**
- Climate impacts on the coastline are not yet as severe nor do they result in a loss of visitation.
- City of CT coastal management team has significantly invested in management capacity, institutional knowledge, better valuation techniques etc.

Protected areas

- **National and provincial parks, and other protected areas, are already experiencing severe climate impacts**. The January 2026 floods at Kruger National Parks, the droughts declared in the Capes, bush encroachment at Ukhahlamba-Drakensberg, and floods and fires at Pilanesberg,
- **These institutions are also often challenged with general site upkeep and, sometimes, basic governance (as in the case of the Pilanesberg).**

Cape Winelands

- **The Cape Winelands is unique among ecotourism attractions, as it comprises hundreds of individual farms. A distinct challenge is that many farmers are not making sufficient profits** to reinvest or adopt new technologies and insurance premiums are **unaffordable**.

"*Often wine farms are crippled for a generation after a devastating fire*" (Bruce Jack, wine.co.za. 11 Feb 2026).

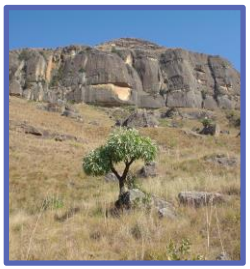
Findings: technological adaptation

In general, several research, **assessment tools** and **applications** already exist. The main focus now needs to be on implementation; and to better understand the interactions between climate and other stressors.

SA WINE: TerraClim, pre-breeding genetic programmes, university partnerships

South African NATIONAL PARKS

SANParks: Climate Vulnerability Assessments, pilots (penguins, quivertrees), in-depth site assessments



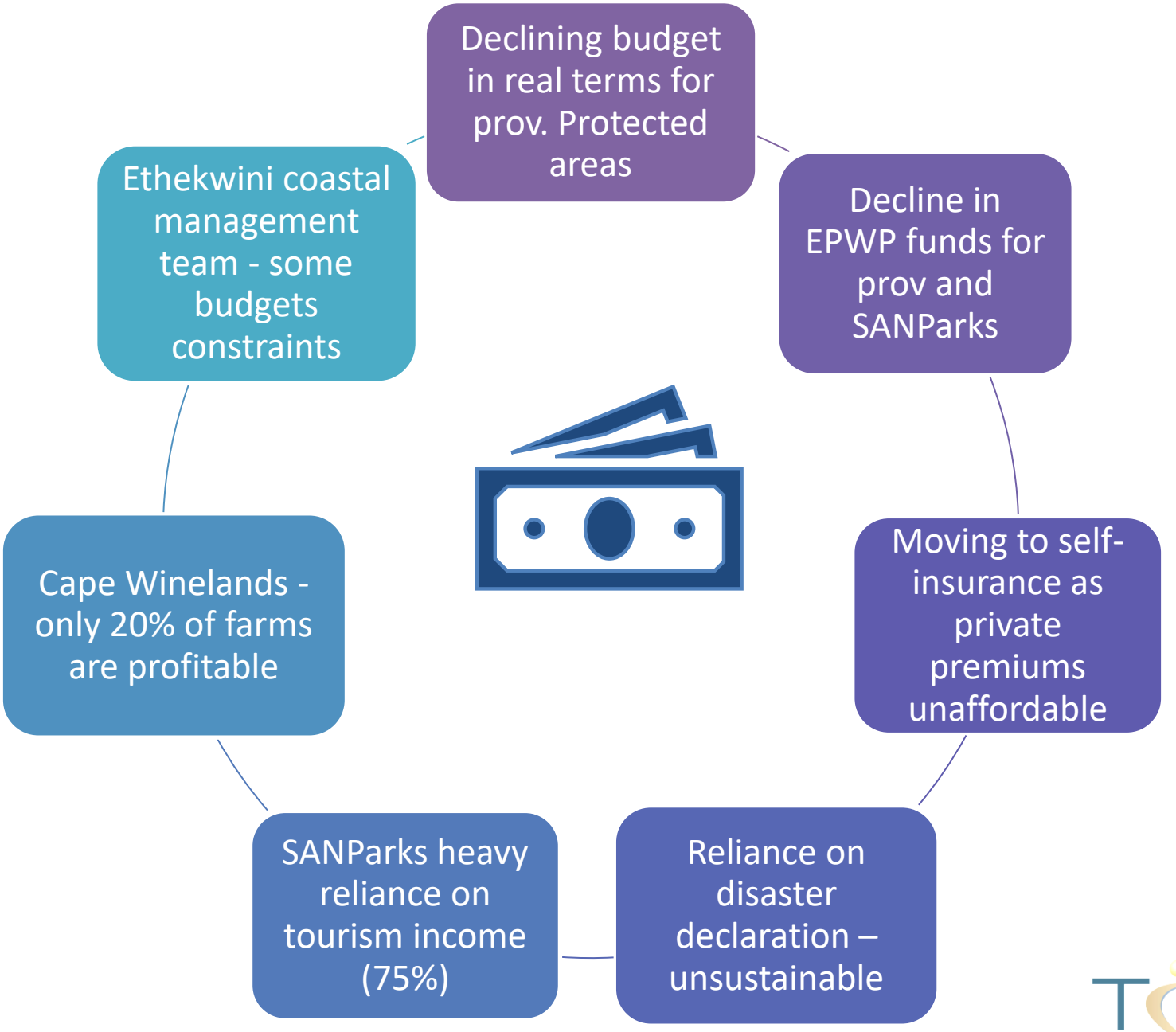
Prov. protected areas know the techniques, can be low-tech, but struggle to consistently implement

iSimangaliso Wetland Park

ISimangaliso 2023 Climate Vulnerability Index for UNESCO WHS; ecosystem adaptation partnerships

Beaches: soft and hard infrastructure responses, prioritisation, asset valuation techniques, coastal modelling and engineering.

Findings: persistent financial precarity



Findings: management effectiveness

Provincial protected area institutions are often **challenged with general site upkeep and, sometimes, skills and basic governance**:

"...a lack of capacity and skilled/experienced staff and/or staff who are not dedicated. Furthermore, limited access to vehicles, equipment, infrastructure, supplies, or general operational resources, together with poor maintenance of these, is also identified, as is the procurement process, which is viewed as overly complicated and not 'fit for purpose'" (Patel et al, 2023).

- NWPTB (Pilanesberg) does not have a functioning board, nor does it undertake adequate maintenance (NWPTB, 2024).
- Isimangaliso WP met all its KPIs in 2024/5 but scored '*low to moderate*' on effectiveness of capacity in CVI conducted in 2023 (Heron et al, 2026)
- CoCT has invested heavily over time in capacity and institutional knowledge (16 coastal engineers; new asset valuation techniques).
- Ethekwini investing in new coastal modelling skills and technical partnerships.

Variety of adjacent landowners and communities, their differing socio-economic vulnerabilities and reliance on the ecotourism attractions, historic forced removal and fortress conservation, **create pressures and opportunities for partnerships.**

Findings and recommendations: Partnerships create flexibility, build resilience

Giving constrained finances and management effectiveness, limited flexibility, **working through partnerships with external organisations is essential**. This is the main adaptive management strategy.

- **NGOs and SANParks' extensive volunteer cohort**, the *honorary rangers* are essential delivery partners. Partners' work is increasingly in support of **day-to-day management** / core activities.

Further potential

- **Successful strategic partnerships with organised tourism have been deployed around major threats to tourism**: rhino poaching, safety and security around southern Kruger. But not yet in the face of CC.
- **Nature-based Solutions funding potential** to build on (declining) EPWP with *EPWP-like* programmes. ("win-win-win" e.g. Drakensberg).

Need for local, national, and issue-based **collaboration, coordination and communication**

Thanks

Discussions